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	Application No.	Applicant(s)	
Notice of Allowability	09/590,027	KLEIMAN, STEVEN R.	
	Examiner	Art Unit	
	Chau Nguyen	2176	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *08/09/2007*.

2. ☒ The allowed claim(s) is/are *1-8, 10, 12-21, 23-26, and 28-42*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some*   c) ☐ None   of the:

    1. ☐ Certified copies of the priority documents have been received.

    2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

    * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

        1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____ .

    (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____ .

    Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)

3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application

6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .

7. ☒ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____ .

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes

and/or additions be unacceptable to applicant, an amendment may be filed as provided

by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be

submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview

with Jordan Becker, Reg. 39,602.

The application has been amended as follows:

1. (Currently Amended) A method of sending data between a client and a server using

at least one of a first plurality of data buffers of different sizes in said client and at least

one of a second plurality of data buffers of different sizes in said server, <u>wherein at least</u>

<u>some of said first plurality of data buffers are matched to different sizes of the second</u>

<u>plurality data buffers, the method</u> comprising steps of:

sending, from said client to said server, an address of a client data buffer of said

first plurality of data buffers, wherein said client data buffer is for a data transfer to be

performed and said address of said client data buffer is responsive to a size of a data

block to be transferred; and

transferring said data block between said client and said server using said client

data buffer and a server data buffer of said second plurality of data buffers, said client

data buffer and said server data buffer matched to a size of data blocks to be

transferred between said client and said server.

2. (Previously Presented) A method as in claim 1, wherein

        a request or a response for transferring said data includes at least some control

information; and

        said steps of transferring said data are responsive to said control information.

3. (Previously Presented) A method as in claim 1, wherein

        a request or a response for transferring said data includes at least one memory

address;

        said steps of sending said data blocks are responsive to said memory address,

wherein said data is read from or written to a memory in response to said memory

address.

4. (Currently Amended) A system including

        a client and server;

        a NUMA communication link coupled to said client and server; and

        a first plurality of data buffers of different sizes in said client and a second

plurality of data buffers of different sizes in said server, for data transfers between said

client and said server using said NUMA communication link, wherein at least some of

said first plurality of data buffers are matched to different sizes of the second plurality

data buffers;

wherein when data is transferred between said client and said server, an address

of a client data buffer of said first plurality of data buffers is sent from said client to said

server, with said address of said client data buffer for a data transfer responsive to a

size of a data block to be transferred, and said client data buffer and a server data

buffer of said second plurality fo-of data buffers are used to transfer said data block,

with said client data buffer and said server data buffer matched to a size of said data

block to be transferred between said client and said server.

5. (Previously Presented) A system as in claim 4, also including a byte serial

communication link, wherein transferring said data also uses said byte serial

communication link.

6. (Currently Amended) A system as in claim 4, wherein

either said client or server performs processing of information in transferring said

data;

said processing is performed in an order convenient to both said client and

server; and

said orderwhich is decoupled from an order of transferring said data.

7. (Previously Presented) A system as in claim 4, wherein transferring said data is responsive to control information in a request or a response for said data transfer.

8. (Previously Presented) A system as in claim 4, wherein transferring said data is responsive to a request or a response for said data transfer.

9. (Cancelled)

10. (Previously Presented) A system as in claim 4, wherein said one or more data buffers also is selected responsive to control information in a request or a response for transferring said data.

11. (Cancelled)

12. (Previously Presented) A system comprising:

a server, said server having a memory including a client communication region and a data transfer region, said data transfer region having a first plurality of data buffers of different sizes for data transfers to and from a client, at least some of said first plurality of data buffers matched to different sizes of data blocks to be transferred into or out of those data buffers and matched to different sizes of a second plurality data buffers in said client that are also matched to said different sizes of said data blocks to be transferred; and

a remote DMA communication link coupled to said data transfer region;

wherein said client communication region includes information regarding a data

transfer into or out of said data transfer region; and

wherein an address of one or more of said first plurality of data buffers for said

data transfer is selected for a data transfer responsive to a size of data blocks for said

data transfer.

13. (Original) A system as in claim 12, including a byte serial communication link

coupled to said client communication region.

14. (Original) A system as in claim 12, including a processing element in said server

coupled to said data transfer region, said processing element responsive to a request

from a client or a response to a client.

15. (Original) A system as in claim 12, including a processing element in said server

coupled to said data transfer region, said processing element responsive to control

information in said client communication region.

16. (Original) A system as in claim 12, including a processing element in said server

coupled to said data transfer region, said processing element using information in said

data transfer region independently of said remote DMA communication link.

17. (Original) A system as in claim 12, including a request from a client or a response to said client having information regarding a location within data transfer region.

18. (Original) A system as in claim 12, wherein said client communication region stores a request from a client or a response to said client.

19. (Original) A system as in claim 12, wherein said data transfer region stores a data transfer to or from a client.

20. (Original) A system as in claim 12, wherein said remote DMA communication link includes a NUMA communication link.

21. (Currently Amended) A method comprising:

communicating a file system request between a client and a file server; and

sending data between said client and said file server in response to the request,

by using a non-uniform memory access (NUMA) communication link to perform a direct memory access (DMA) operation involving at least one of a plurality of data buffers of different sizes both in said client and in said file server, wherein at least some of said data buffers both in said client and in said file server are matched to sizes of data blocks to be transferred into or out of said data buffers, wherein at least some of said data buffers in said client are matched to different sizes of data buffers in said file server, and

wherein selection of an address of one or more of said data buffers for a data transfer is

responsive to information in said request or a response to said request and is

responsive to a size of data blocks to be transferred in said DMA operation.

22. (Cancelled)

23. (Original) A method as in claim 21, wherein said memory access operation includes

a remote DMA operation.

24. (Original) A method as in claim 21, wherein said client includes a database server.

25. (Currently Amended) A method comprising:

    communicating a database request between a client and a database server; and

    sending data between said client and said database server in response to the

request, by using a non-uniform memory access (NUMA) communication link to perform

a direct memory access (DMA) operation involving at least one of a plurality data

buffers of different sizes both in said client and in said database server, wherein at least

some of said data buffers both in said client and in said database server are matched to

sizes of data blocks to be transferred into or out of said data buffers, wherein at least

some of said data buffers in said client are matched to different sizes of data buffers in

said database server, and wherein selection of an address for one or more of said data

buffers for a data transfer is responsive to information in said request or a response to

said request and is responsive to a size of data blocks to be transferred in said DMA

operation.

26. (Currently Amended) A method comprising:

      communicating a request between a client and a cache server; and

      sending data between said client and said cache server in response to the

request, by using a non-uniform memory access (NUMA) communication link to perform

a direct memory access (DMA) operation involving at least one of a plurality of data

buffers of different sizes both in said client and in said cache server, wherein at least

some of said data buffers both in said client and in said cache server are matched to

sizes of data blocks to be transferred into or out of said data buffers, wherein at least

some of said data buffers in said client are matched to different sizes of data buffers in

said cache server, and wherein selection of an address for one or more of said data

buffers for a data transfer is responsive to information in said request or a response to

said request and is responsive to a size of data blocks to be transferred in said DMA

operation.

27. (Cancelled)

28. (Previously Presented) A method as in claim 1, wherein said data buffers in said

client include different sizes and alignments than said data buffers in said server.

29. (Previously Presented) A system as in claim 4, wherein said data buffers in said client include different sizes and alignments than said data buffers in said server.

30. (Previously Presented) A system as in claim 12, wherein said data buffers in said client include different sizes and alignments than said data buffers in said server.

31. (Previously Presented) A method as in claim 21, wherein said data buffers in said client include different sizes and alignments than said data buffers in said file server.

32. (Previously Presented) A method as in claim 25, wherein said data buffers in said client include different sizes and alignments than said data buffers in said database server.

33. (Previously Presented) A method as in claim 26, wherein said data buffers in said client include different sizes and alignments than said data buffers in said cache server.

34. (Previously Presented) A method as in claim 26, wherein said sending data is done asynchronously with respect to said request.

35. (Currently Amended) A method comprising:

      communicating a request between a client and a web server; and

sending data between said client and said web server in response to the request, by using a non-uniform memory access (NUMA) communication link to perform a direct memory access (DMA) operation involving at least one of a plurality of data buffers of different sizes both in said client and in said web server, wherein at least some of said data buffers both in said client and in said web server are matched to sizes of data blocks to be transferred into or out of said data buffers, wherein at least some of said data buffers in said client are matched to different sizes of data buffers in said web server, and wherein selection of an address for one or more of said data buffers for a data transfer is responsive to information in said request or a response to said request and is responsive to a size of data blocks to be transferred in said DMA operation.

36.   (Previously Presented) A method as in claim 35, wherein said data buffers in said client include different sizes and alignments than said data buffers in said web server.

37.   (Previously Presented) A method as in claim 35, wherein said sending data is done asynchronously with respect to said request.

38.   (Previously Presented) A method as in claim 1, wherein said transferring is done asynchronously with respect to a request that initiated said transferring.

39.   (Previously Presented) A method as in claim 4, wherein said data transfer is done asynchronously with respect to a request that initiated said transfer.

40. (Previously Presented) A method as in claim 12, wherein said data transfer is done asynchronously with respect to a request that initiated said transfer.

41. (Previously Presented) A method as in claim 21, wherein said sending data is done asynchronously with respect to said request.

42. (Previously Presented) A method as in claim 25, wherein said sending data is done asynchronously with respect to said request.

REASONS FOR ALLOWANCE

1.   The following is a statement of reasons for the indication of allowable subject

matter:

In interpreting the claims in light of the specification and applicant's arguments,

the Examiner finds the claimed invention is patentably distinct from the prior art of

record.

The prior art of record includes Goldrian et al. (Goldrian), US Patent No.

6,026,448, Massa et al. (Massa), US Patent No. 6,658,469, Mohamed, US Patent No.

5,899,994, and Brock et al. (Brock), US Patent No. 6,499,028.

Goldrian discloses a method for exchanging messages between a multitude of

computer system using sender system's memory as a buffer from the message to be

transferred to receiver's system, and using a direct memory adapter (DMA) in the

receiver system to map to the start address of the sender's system memory (Abstract).

Massa discloses *in the* Abstract, col. 11, lines 10-20 and Fig. 5: a data transfer

between two applications or devices 132 and 136 (application 136 is considered as a

client and application 132 is a server and col. 11, lines 31-53: each application's set of

receiving buffers may also be large or small (plural data buffers of different sizes in the

client and the server. Massa further discloses sending a message from the switch 126

(which is located at the client 136), the message includes the location (address) of the

application's set of transmission buffers 138 (buffers of the client 136) and the size of

the data to be transferred from the switch 126 of application 136 (client) to the switch

120 of application 132 (server) via message buffers 148 and 125 (data buffers) (col. 12, lines 13-17 and col. 13, lines 37-50). Massa further discloses in col. 12, lines 42-59: data is transferred from transmission buffer 138 (located at the client application 136) and receiving buffer 134 (located at the server application 132), and the remote switch 120 of the server transfers an amount of data equal to the size of the receiving buffer 134 (server's buffer) from the transmission buffer 138 (client's buffer) into the set of receiving buffers 134 (col. 13, lines 37-50)).

Mohamed discloses number of CPUs or computers, each CPU (is considered as either client or server) has a few processes, and each process has a storage buffer (TSB), and each buffer may be of a different size (col. 6, lines 27-55 and Fig. 5). Mohamed further discloses allocating the TSB pool in physical memory and aligning the TSBs (col. 8, lines 2-5 and col. 10, lines 35-49).

Brock discloses a computer system includes a local node connected with one or more remote nodes, the computer system contemplates a non-uniform memory architecture (NUMA) which performs incoming transactions and outgoing transactions between the local node and the remote nodes (Fig. 1, col. 6, line 37 – col. 7, line 31). Brock further discloses physical address space includes a plurality of memory region, and each of divided into a plurality of memory blocks, and data transaction matched in the corresponding region or memory block sizes (col. 3, lines 40-67 and col. 11, line 35 – col. 12, line 56).

Claim 1 is allowed because the prior art of record does not expressly disclose alone or in combination at least some of plurality of data buffers in a client are matched

to at least some of plurality of data buffers in a server, and the client data buffers and the server data buffers matched to a size of data blocks to be transferred between the client and the server.

2.   The dependent claims 2-3, 28 and 38 further limit independent claim 1. Claims 4-8, 10, 12-21, 23-26, 29-37 and 39-42 are considered allowable for the same reasons set forth for claims 1-3, 28 and 38.

3.   Any comments considered necessary by applicant must be submitted no later than the payment of the Issue Fee and, to avoid processing delays, should preferably accompany the Issue Fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chau Nguyen whose telephone number is (571) 272-4092. The Examiner can normally be reached on Monday-Friday from 8:30 am to 5:30 pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Doug Hutton, can be reached at (571) 272-4137.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. On July 15, 2005, the Central Facsimile (FAX) Number will change from 703-872-9306 to 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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